Issue 3 2009

BRFSS
Behavioral Risk Factor Surveillance System

MONTANA Fact[or]s

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Serious Psychological Distress among Montana Adults 2007 BRFSS findings

Mental illnesses, many of which are chronic diseases, are a major source of the burden of disease in the United States.[1]

In Montana, of the ten leading causes of death of all residents in 2007, seven were chronic diseases including cancer, heart disease, chronic lower respiratory diseases, cerebrovascular disease, Alzheimer's disease, diabetes, liver/kidney diseases. Unintentional injuries were the fourth leading cause of death in Montana and suicide ranked eighth following diabetes.[2] How mental illness interacts with other chronic diseases is central to understanding the sequelae of diseases and their subsequent treatment. The estimation of the prevalence of mental illness and its related psychological distress is an important component of population health surveillance. As a result of this nationally recognized need, in 2005, the Division of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion of CDC, and the Center for Mental Health Services of SAMHSA, proposed an optional mental illness and stigma module and additional funding for the Behavioral Risk Factor Surveillance System (BRFSS) in 35 states throughout the country.[3]

The first six questions of the proposed 10 question module are the basis of the Kessler (K6) Index.[4] The K6 is a standardized and validated measure of psychological distress that was designed to help in estimating the prevalence of serious mental illness (SMI) in populations.[5,6] The K6 measure has been widely used in the U.S. and Australia and has been shown to provide acceptable prevalence estimates of serious DSM-IV mental disorders.[7] This instrument has been used in both clinical and population-based settings, and in both self-administered and telephone-administered modes. Two additional questions in the module assess illness severity and treatment including: 1) the extent of usual activity limitations due to K6-assessed distress, and 2) current treatment for a mental health condition. The final two questions of the module assess stigma measured as 1) attitudes toward recovery, and 2) attitudes toward interactions with persons with mental illnesses. Inclusion of these questions within this single BRFSS module allows the estimation of the population prevalence of serious psychological distress (SPD), as well as factors related to perceived stigma and access to mental health care. Therefore, through a collaborative effort between the Montana Addictive and Mental Disorders Division and the Public Health and Safety Division of DPHHS, the module was implemented on the Montana BRFSS for 2007 and the results are presented here.

Table 1. Prevalence of Serious Psychological Distress Among Montana Adults, 2007

	Have Serious Psychological Distress (SPD) †				
	Population Estimate	Prevalence Wt.%	Prevalence 95% CI	Adj. Odds Ratio[1] AOR	Adj. Odds Ratio[1] 95% CI
All Adults	24,074	3.5	2.9 - 4.2		-
Sex:					
Male	11,651	3.4	2.5 - 4.7	Referent	-
Female	12,423	3.5	2.8 - 4.4	1.20	0.77 - 1.85
Age:					
18 - 24	4,122	4.9	2.4 - 9.8	2.28	0.66 - 7.92
25 - 34	3,734	3.4	2.0 - 5.6	**3.24**	**1.45 - 7.25**
35 - 44	4,185	3.7	2.5 - 5.3	**2.78**	**1.41 - 5.45**
45 - 54	6,748	4.6	3.4 - 6.2	**2.85**	**1.56 - 5.22**
55 - 64	1,757	**1.6**	1.0 - 2.5	0.80	0.42 - 1.50
65+	3,258	2.6	1.8 - 3.8	Referent	-
Race/Ethnicity:					
White, non-Hispanic	18,975	**3.0**	2.5 - 3.7	Referent	-
AI/AN*	2,067	6.8	3.9 - 11.6	0.98	0.46 - 2.09
Other or Hispanic**	2,796	8.5	3.9 - 17.4	1.67	0.61 - 4.52
Education:					
<High School	6,401	**14.2**	9.1 - 21.7	**7.93**	**3.67 - 17.15**
High School	9,651	**4.4**	3.3 - 5.8	**2.49**	**1.34 - 4.64**
Some College	819	2.4	1.7 - 3.4	1.44	0.76 - 2.71
College Degree	2,898	1.3	0.8 - 2.1	Referent	-
Income:					
<$15,000	5,617	10.4	7.6 - 14.0	not included in the model	
$15,000 - $24,999	7,254	7.2	5.2 - 9.9		
$25,000 - $49,999	3,445	1.7	1.1 - 2.6		
$50,000 - $74,999	1,987	1.7	0.9 - 2.9		
$75,000+	1,020	0.7	0.3 - 1.7		
Marital Status:					
Married	11,364	2.4	1.8 - 3.2	Referent	-
Previously Married ***	7,663	**6.7**	5.2 - 8.6	**2.09**	**1.33 - 3.26**
Never Married	5,047	5.0	3.0 - 8.3	1.45	0.61 - 3.46
Employment Status:					
Employed	9,875	2.2	1.6 - 3.1	Referent	-
Unemployed	2,865	**10.5**	5.5 - 19.3	**3.07**	**1.29 - 7.32**
Homemaker or student	1,147	1.5	0.8 - 2.9	0.53	0.22 - 1.25
Retired	2,751	2.3	1.6 - 3.5	1.72	0.95 - 3.11
Unable to Work	6,580	**22.7**	16.9 - 29.7	**10.71**	**6.35 - 18.06**

1 Adjusted for: sex, age, race/ethnicity, education, marital status, employment.
* American Indian or Alaska Native only
** All other non-White (including multiracial) or Hispanic
*** Divorced, widowed, or separated
† Sample N=5995; Pop. Est. 704,245

Serious Psychological Distress

Nationally, in the 35 states, the District of Columbia, and Puerto Rico, that implemented the module, about 4% of adults reported SPD.[8] The highest prevalences of SPD were found in Mississippi, Kentucky and Puerto Rico at about 6.6% and the lowest prevalences of SPD in Iowa, Alaska and Nebraska at about 2.4%. Approximately 24,074 Montana adults (3.5%) were classified as having SPD. Unadjusted and adjusted prevalence estimates are provided in Table 1. There was no difference in the prevalence of SPD by sex. Adults ages 55 to 64 tended to have lower prevalence of SPD (1.6%) than adults ages 35 to 54 (≥3.7%), but no statistically significant differences were found among the other age groups in the unadjusted estimates. However, after adjustment for sex, age, race/ethnicity, education, marital status and employment status, adults ages 25 to 64 were significantly more likely to report SPD than their older counterparts. Whites (3.0%) were less likely to report SPD than American Indians (6.8%) and other minority groups (8.5%), but these relationships disappeared in the fully adjusted model.

Adults with a high school education (4.4%) or less educational attainment (14.2%) were more likely to have SPD than adults with greater educational attainment (≤2.4%). Further, adults in households earning less than $25,000 per year (≥7.2%) also reported having significantly higher rates of SPD than adults in households with higher reported earnings (≤2.4%). Previously married adults, including divorced, widowed, or separated (6.7%) had a higher prevalence of SPD than those who were part of a married couple (2.4%). Unemployed adults (10.5%) and those unable to work (22.7%) had significantly higher prevalence of SPD than those who were employed, retired or a homemaker/student (≤2.3%).

Relationships to Selected Health Statuses, Risk Behaviors and Chronic Health Conditions

Unadjusted prevalence estimates indicated that physical inactivity, current smoking, asthma, arthritis and chronic joint pain, as well as high cholesterol and cardiovascular disease were all significantly associated with serious psychological distress (Table 2). Furthermore, several social and health statuses were related to SPD. As might be expected, SPD was more likely among adults with reported fair to poor health status and disability status than those without SPD, as were reported victims of rape or attempted sexual assaults more likely to report SPD than not (Table 3). Almost one in two adults with SPD were physically inactive, current smokers, had arthritis and high cholesterol. However, there were not any significant associations found between SPD and veteran status, weight status, alcohol consumption, diabetes, or high blood pressure in the unadjusted estimates.

Table 2. Selected Chronic Conditions and Health Risks among Adults With and Without SPD, Montana 2007

	Have SPD		No SPD	
	Wt.%	95% CI	Wt.%	95% CI
Lifetime Asthma[1]:	**27.2**	**19.2 - 37.0**	**12.6**	**11.4 - 13.9**
Current Asthma[2]:	**21.1**	**13.9 - 30.5**	**8.8**	**7.8 - 10.0**
Arthritis[3]:	**45.6**	**36.2 - 55.4**	**28.5**	**27.0 - 30.0**
Chronic Joint Pain[4]	**68.9**	**59.2 - 77.2**	**44.1**	**42.3 - 45.9**
Diabetes[5]:	10.8	6.9 - 16.6	6.4	5.7 - 7.1
High Blood Pressure[6]:	30.4	22.7 - 39.4	25.2	23.8 - 26.6
High Cholesterol[7]:	**55.2**	**44.5 - 65.4**	**33.8**	**32.1 - 35.5**
Cardiovascular Disease[8]:	**17.9**	**11.6 - 26.5**	**7.3**	**6.6 - 8.1**
Heart Attack	**9.0**	**4.6 - 16.9**	**3.9**	**3.4 - 4.5**
Angina or Coranary Artery Disease	5.4	3.0 - 9.6	3.5	3.0 - 4.0
Stroke	**7.6**	**4.0 - 14.0**	**2.4**	**2.0 - 2.8**
Physical Inactivity[9]	**45.7**	**36.4 - 55.3**	**18.2**	**16.9 - 19.5**
Current Smoker[10]	**44.8**	**35.3 - 54.7**	**18.5**	**17.1 - 18.6**
Binge Drinking[11]	25.4	17.4 - 35.6	17.1	15.6 - 18.6
Heavy Drinking[12]	8.8	4.9 - 15.2	5.3	4.5 - 6.2

1 Have you ever been told by a doctor, nurse, or other healthcare professional that you have asthma?
2 Do you still have asthma?
3 Have you ever been told by a doctor or other health care professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?
4 During the past 30 days, have you had symptoms of pain, aching, or stiffness in or around a joint? (Do not include back or neck)
5 Have you ever been told by a doctor that you have diabetes?
6 Have you ever been told by a doctor that you have high blood pressure?
7 Have you ever been told by a doctor that you have high cholesterol?
8 Have you ever been told by a doctor that you have had a heart attack (MI), angina or coronary artery disease, or a stroke?
9 No leisure time physical activity or exercise in past 30 days.
10 Current Smoker-have smoked at least 100 cigarettes in lifetime and currently smoke.
11 Binge drinker: Men more than 5 drinks in one occasion; women more than 4 drinks in one occasion in past 30 days.
12 Heavy drinker: Men more than 2 drinks per day; women more than 1 drink per day.

Table 3. Selected Health and Social Statuses among Adults With and Without Serious Psychological Distress, Montana 2007

	Have SPD		No SPD	
	Wt.%	95% CI	Wt.%	95% CI
General Health Status[1]:				
Good to Excellent	**40.0**	**31.1 - 49.7**	**87.4**	**86.3 - 88.5**
Fair to Poor	**60.0**	**50.3 - 68.9**	**12.6**	**11.5 - 13.7**
Weight Status[2]:				
Neither Overweight or Obese	37.3	28.0 - 47.6	38.0	36.1 - 39.8
Overweight	35.4	25.8 - 46.3	39.4	37.6 - 41.3
Obese	27.3	20.1 - 36.0	22.6	21.1 - 24.2
Disability Status[3]:				
Disability	**67.0**	**57.0 - 75.7**	**21.4**	**20.0 - 22.9**
No Disability	**33.0**	**24.3 - 43.0**	**78.6**	**77.1 - 80.0**
Victimization Status:				
Rape Victim [4]	**18.2**	**12.2 - 26.4**	**4.9**	**4.2 - 5.7**
Attempted Sexual Assault Victim	**21.3**	**14.0 - 31.2**	**6.8**	**5.9 - 7.7**
Veteran Status[6]:	13.7	8.4 - 21.5	14.7	13.6 - 16.0

1 Self-rated general health, based on a scale from excellent to poor.
2 Weight Status: Overweight-BMI greater than or equal to 25 and less than 30; Obese-BMI greater than or equal to 30.
3 Disability Status: Disability: Percent who answer yes to either or both of the following two questions: Are you limited in anyway in any because of physical, mental or emotional problems? Do you now have any health problem that requires you to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone?
4 Respondent said yes to "Has anyone EVER had sex with you after you said or showed that you didn't want them to or without your consent?
5 Respondent said yes to "Has anyone EVER ATTEMPTED to have sex with you after you said or showed that you didn't want them to or without your consent? Respondent said yes to: Have you ever served on active duty in the US Armed Forces, either in the regular military or in a National Guard or military reserve unit?
6 Respondent said yes to: Have you ever served on active duty in the US Armed Forces, either in the regular military or in a National Guard or military reserve unit?

Table 4. Adjusted odds ratios[1] for SPD by selected Chronic Conditions, Health Risks and Statuses, Montana adults, 2007 (with 95% confidence intervals).

Referent is absence of the condition:	SPD (n = 5523)	
	AOR	95% CI
Lifetime Asthma:	**1.78**	**1.03 - 3.07**
Current Asthma:	1.78	0.96 - 3.30
Arthritis:	**1.79**	**1.04 - 3.10**
Chronic Joint Pain:	**2.47**	**1.53 - 3.99**
Diabetes:	1.17	0.65 - 2.09
High Blood Pressure:	1.01	0.64 - 1.55
High Cholestrol:	**2.70**	**1.62 - 4.51**
Cardiovascular Disease:	1.38	0.79 - 2.41
Heart Attack:	1.07	0.49 - 2.34
Angina or CAD:	1.30	0.59 - 2.89
Stroke:	1.69	0.71 - 4.02
Physical Inactivity	**2.71**	**1.88 - 4.01**
Current Smoker	**1.92**	**1.25 - 2.95**
Binge Drinking	**1.82**	**1.06 - 3.12**
Heavy Drinking	1.92	0.90 - 4.12
Fair to Poor Health Status	**5.48**	**3.44 8.72**
Weight Status:		
Overweight	1.09	0.60 - 1.96
Obese	1.22	0.72 - 2.05
Have Disability	**5.89**	**3.55 - 9.77**
Victimization Status:		
Rape Victim	**2.65**	**1.51 - 4.65**
Attempted Rape Victim	**8.64**	**1.67 44.80**
Veteranan	1.24	0.56 - 2.74

1 Adjusted for: sex, age, race/ethnicity, education, marital status, employment, and the indicated risk behavior.

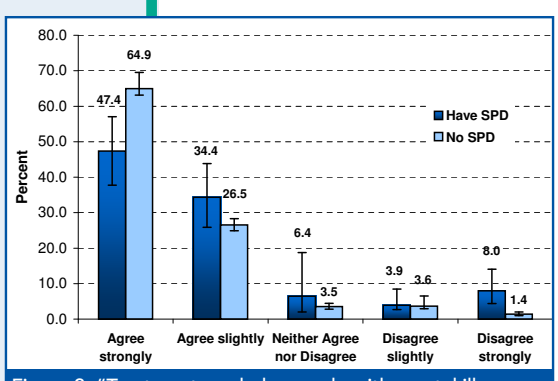

Figure 3. "Treatment can help people with mental illness lead normal lives" by mental health status, Montana Adults, 2007

After adjustment for sociodemographic characteristics and the specified behavior or condition, all of the relationships remained except for adults with current asthma and those with cardiovascular disease, who in the adjusted estimates were no more likely to report SPD than not report SPD. The adjusted odds ratios of health statuses, risks, and chronic diseases and serious psychological distress confirm that the associations between SPD and these set of variables are statistically significant (Table 4). In the fully adjusted model, when confounding factors are controlled, those adults with serious psychological distress appear to be more likely to binge drink than adults without SPD.

Serious Psychological Distress and Quality of Life

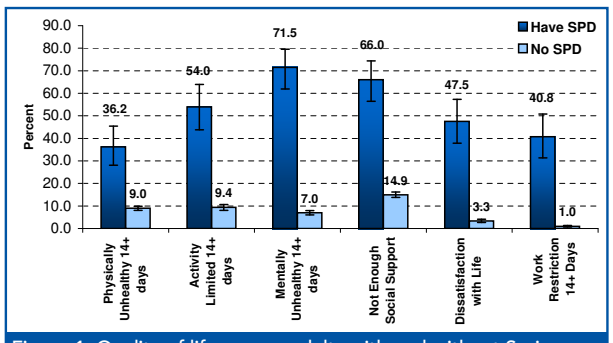

Figure 1. Quality of life among adults with and without Serious Psychological Distress, Montana 2007

As shown in Figure 1, adults who experienced SPD were **more likely to have diminished quality of life as measured by the number of physically or mentally unhealthy days in a month, life satisfaction, social and emotional support, activity and work limitations** than those adults without SPD. Difficultly functioning in one or more major life areas is characteristic of person with SPD. Montana adults with SPD were significantly more likely than those without SPD to be restricted from working on 14+ days in a month and to also be limited in their doing regular activities such as self-care or recreation on 14 or more days in the past 30 because of poor mental health. People with SPD were also almost four times more likely than those without SPD to report 14 or more days in the past 30 where their physical health was not good. Striking differences were apparent in all these measures by SPD status, suggesting poorer quality of life among adults with SPD.

Serious Psychological Distress and Needed Health Care Services

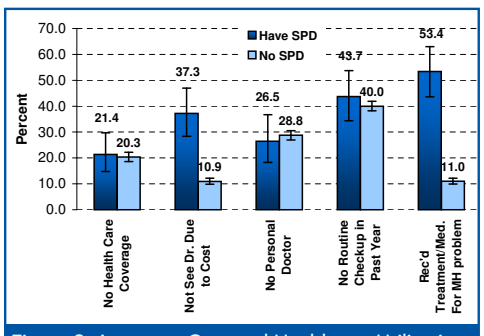

Figure 2. Access to Care and Healthcare Utilization among adults with and without Serious Pychological Distress, Montana 2007

Adults with SPD were more likely to be taking medicine or receiving treatment from a doctor or other health professional for any type of mental health condition or emotional problem than those without SPD. **However, about one-half or 11,155 adults with SPD (46.6%) were not receiving any medication or mental health treatment. Nationally, approximately 53.4% of persons with SPD were untreated.** The highest prevalences of untreated SPD were found in Hawaii, California and Colorado (67.0% to 65.2%) and the lowest prevalence of untreated persons with SPD were in Alaska, Kentucky and Maine (33.3% to 39.5%).[8] Figure 2 shows that the proportion of the Montana SPD population without health care coverage; who do not have a personal doctor; and who did not have a routine check-up in the past year are not statistically different from the corresponding proportions in the population without SPD. However, in the past year, **37% of adults with SPD could not see a doctor due to cost**, in contrast to **11% of adults without SPD that went without care due to cost**. These results imply a higher prevalences of incomplete health care coverage or perhaps intermittent coverage among the SPD population, which can result in under-treatment for mental health conditions.[9]

Stigma Associated with Mental Illness

The final two questions of the module asked attitudes toward people with mental illness and were used to assess stigma associated with mental illness. Figure 3 reflects the level of agreement to the statement "treatment can help people with mental illness lead normal lives." Those adults with SPD were more likely to slightly or strongly disagree (11.9%) and less likely to agree (81.8%) with this statement than those without SPD (5.0% and 91.4%, respectively). **Overall, however, most people think treatment can help people with mental illness lead normal lives.**

Figure 4 depicts the responses to the statement "people are generally caring and sympathetic to people with mental illness" for those with and without SPD. Adults without SPD (59.2%) were more likely to agree with this statement, while people with SPD were more likely to disagree with this statement. More than half (54.5%) of those with SPD slightly disagreed and more than one in four with SPD strongly disagreed (27.9%) that people are generally caring and sympathetic to those with mental illness.

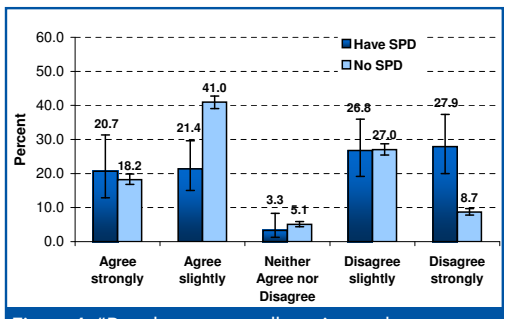

Figure 4. "People are generally caring and sympathetic to people with mental illness" by mental health status, Montana Adults 2007

Discussion and Recommendations

Persons with mental illnesses suffer from the effects of their illness as well as from stigma and discrimination associated with these illnesses.[10,11] Lack of knowledge or misinformation about mental illness can inhibit the recovery of persons suffering from mental illness, limit their participation in society, and also indirectly affect caregivers, families and friends. Persons with mental illness have much higher levels of unhealthy behaviors than do those without mental illness, which place them at increased risk of death, physical disease and disability.[12, 13]

Surveillance of mental illness and other common physical illnesses and behavioral risk factors tracked by the BRFSS provide state-level data throughout the nation for professionals and lay people to better understand the complex interactions of these conditions and their risks in community populations. Analysis of state-level mental illness surveillance data can be used to create an awareness of the degree of mental health burden in the state, and also provide a rationale to help guide science-based policies and recommendations regarding effective prevention and intervention strategies that will increase access to mental health services and reduce stigma. Surveillance of mental illness-related burdens as well as mental illness as a risk factor for unhealthy behaviors and other chronic diseases should continue to be examined to assess whether utilizing an interdisciplinary approach to health care reduces the prevalence of both physical and mental health concerns over time and increases the well being of Montanans.

For people needing information on where to get help for SPD or other mental health concerns please refer to the following website: **www.networkofcare.org**.

Survey Limitations The BRFSS relies on self-reported data. This type of survey has certain limitations: many times, respondents have the tendency to underreport some behaviors that may be considered socially unacceptable (e.g., smoking, heavy alcohol use); conversely, respondents may over report behaviors that are desirable (e.g., physical activity, nutrition).

Background The Montana Behavioral Risk Factor Surveillance System (BRFSS) has been collecting and reporting state-specific, population-based estimates of health-related data since 1984. The purpose of this statewide telephone survey of Montana residents aged 18 and older is to gather information regarding personal health risk behaviors, selected medical conditions, and the prevalence of preventive health care practices among Montana adults. These BRFSS results have been used by public health agencies, academic institutions, non-profit organizations, and others to develop programs that promote the health of Montana adults and reduce risks that contribute to the leading causes of death in the state. A full set of Montana yearly questionnaires and health indicators can be found on the Department of Public Health and Human Services (DPHHS) BRFSS database query system website at www.brfss.mt.gov. The CDC website www.cdc.gov/brfss also provides national, state, and some local area prevalence estimates of health indicators, as well as access to downloadable datasets for further analyses.

Acknowledgements The Montana BRFSS Office staff gratefully acknowledges the efforts of the Montana residents who took the time to respond to the telephone interviews conducted for this system. The Montana BRFSS is conducted through a Cooperative Agreement between the Centers for Disease Control and Prevention and the Montana Department of Public Health and Human Services. This publication was supported by CDC Cooperative Agreement #U58/CCU82208. For questions, contact Dr. Joanne Oreskovich, MT BRFSS Director (444-2973). The contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC. 3200 copies of this public document were published at an estimated cost of $0.48 per copy, for a total cost of $1536.00, which includes printing and distribution.

Suggested citation Oreskovich, J. Serious Psychological Distress among Montana Adults, 2007 BRFSS findings. Montana Factors. No.3: 2009.

Endnotes

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